Regional labour market data guide

Guide to labour statistics

Learn about our different regional labour market data sources from the ABS and how to use them

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Overview

We produce a range of different jobs and employment statistics at a regional level to provide insights into local labour markets. It can sometimes be challenging to choose which data to use. This page will help you understand what regional labour market data are available, where to find them and how they are best used.

We use the Australian Statistical Geography Standard (ASGS) to divide data across Australia up into estimates for each region.

Our regional labour market data is generally based on a persons place of usual residence, although the Census does have Place of work (/statistics/detailed-methodology-information/information-papers/understanding-place-work-data) data, in addition to the standard usual residence-based geographic data.

You can explore some of the data available for different ASGS regions – including on other topics – on the Data by region (https://dbr.abs.gov.au/) page.

Key sources of regional labour market information

These are three main ABS sources of regional labour market data:

- Labour Force Survey (LFS) - including both traditional direct survey estimates and new higher quality modelled estimates
- Linked Employer-Employee Database (LEED) – which is based on tax data
- Census of Population and Housing

The LFS has traditionally been the most used source of contemporary regional labour market data, although the direct survey estimates have some limitations. While this LFS information has been more timely and frequent than the more detailed annual LEED data or five-yearly Census data, the usefulness of regional estimates is limited by the smaller sample counts that contribute to each region (that is the share of the total large national sample in each of the roughly 90 Statistical Area Level 4 regions).

It is for this reason that the Australian Government invested in improved modelled estimates, which provide the best measure of timely and frequent regional employment and unemployment, and short-term changes in local labour markets.

These new modelled estimates are now being released on a monthly basis. The ABS recommends using these over the direct survey estimates whenever possible. See the 'Modelled v direct estimates' section for more information.

The LEED data, which is published in Jobs in Australia (/statistics/labour/jobs/jobs-australia/latest-release) and Personal Income in Australia (https://www.abs.gov.au/statistics/labour/earnings-and-working-conditions/personal-income-australia/latest-release) , while less timely than the LFS estimates, provides more detailed geographic and other information (e.g. detailed Industry information), and useful insights into longer-term structural change in the labour market.

See the Labour Statistics: Concepts, Sources and Methods (/statistics/detailed-methodology-information/concepts-sources-methods/labour-statistics-concepts-sources-and-methods/latest-release) for a more detailed comparison of the various sources of regional labour market data.

Our headline regional labour market information

Labour Force Survey

The LFS is a monthly collection which provides information about the labour market activity of Australia's resident civilian population aged 15 years and over. The LFS primarily provides estimates of employment and unemployment for the whole of Australia, and in each state and territory. Estimates at the lower geographic levels are a secondary output from the survey, made possible – with limitations – by the large and representative sample.

The LFS provides detailed information on regional labour market estimates by demographic characteristics. We have traditionally published estimates of regional labour market data at the Capital City and Balance of State and Statistical Area Level 4 (SA4), including by sex and age, on a monthly basis.

In addition to these longstanding 'direct' survey estimates (that only use the LFS data, without any additional specific methods), we now produce higher quality modelled Labour Force estimates (at the SA4 level) on a monthly basis (in Labour Force, Australia, Detailed (/statistics/labour/employment-and-unemployment/labour-force-australia-detailed/feb-2024#labour-market-regions-sa4-)). These new modelled estimates are our best source of timely information on employment and unemployment for regions.

Modelled regional labour force estimates

Prior to April 2024, we only produced regional LFS estimates directly from the survey responses. As these regional

estimates are based on smaller sample sizes in each region, they are of a lower level of statistical quality compared to those produced at the national and state and territory levels. Smaller sample size means sampling variability has a greater impact on the results at a regional level. Over time, fluctuations in the data occur across most of the regional labour force data, particularly in regions with smaller populations. These fluctuations are generally caused by sampling variability rather than changes in underlying labour market conditions, though sometimes they are caused by actual local events.

The modelled regional labour force estimates enhance the direct survey estimates of regional labour market data using the combined power of administrative data and statistical modelling.

We use de-identified administrative data sources to model these regional labour market estimates. The two key data sources used are:

- Single Touch Payroll (STP) data from the Australian Tax Office, and
- JobSeeker and Youth Allowance recipients data from the Department of Social Services (DSS)

These administrative data sources contain granular geographic information and are regularly updated. The model produces more stable and reliable estimates, through leveraging the strong relationship between the administrative data and the survey data. More detail on the methodology has been included below.

The model produces estimates of:

1. employed people
2. unemployed people
3. people not in the labour force
4. unemployment rate
5. employment to population ratio
6. participation rate

We currently publish these modelled estimates a week after the LFS headline figures, in Labour Force, Australia, Detailed (/statistics/labour/employment-and-unemployment/labour-force-australia-detailed/latest-release) , alongside the direct survey estimates.

We use a Rao-Yu model to produce these improved regional labour force estimates. It uses the relationship between the administrative data and the survey estimates that is observed across SA4s. The model also makes use of the correlation of labour force status within SA4s and over time. A paper describing the Rao-Yu model can be found in the 'Modelled v direct estimates' section below.

Final adjustments are applied so that the modelled SA4 level estimates are additive to the state level survey estimates.

We use the data sourced from the DSS to model time series changes in unemployment, while employment is modelled using STP data, with the DSS payment recipients data also applied where relevant.

We have published two papers on the development of the model now being used – Improving SA4 level estimates using administrative data models (/statistics/detailed-methodology-information/information-papers/improving-sa4-level-estimates-labour-force-survey-using-administrative-data-models) and Further refinements to modelled SA4 level Labour force estimates using administrative data (/statistics/detailed-methodology-information/information-papers/further-refinements-modelled-sa4-level-labour-force-estimates-using-administrative-data) .

Comparing the modelled and direct estimates

There are some important differences between the estimates produced using the Rao-Yu model and the direct

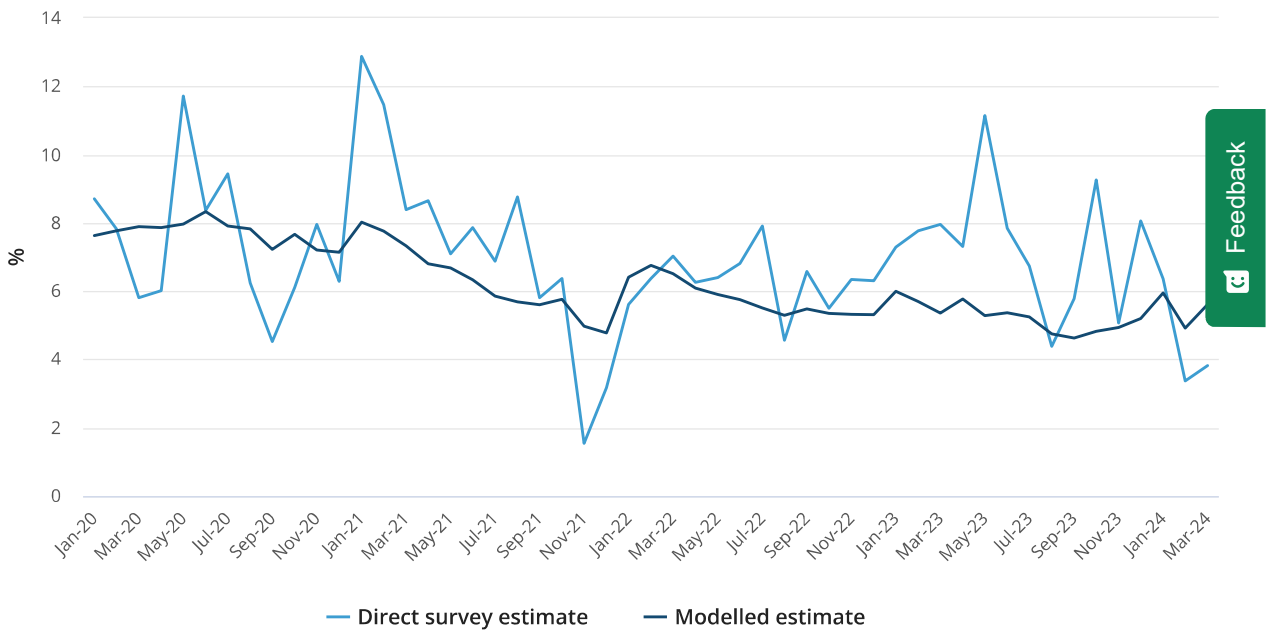
survey estimates.

While there are improvements across all SA4 regions, these improvements are most notable in the less populated regional areas. The use of administrative data in the model reduces the variability caused by particularly small sample sizes.

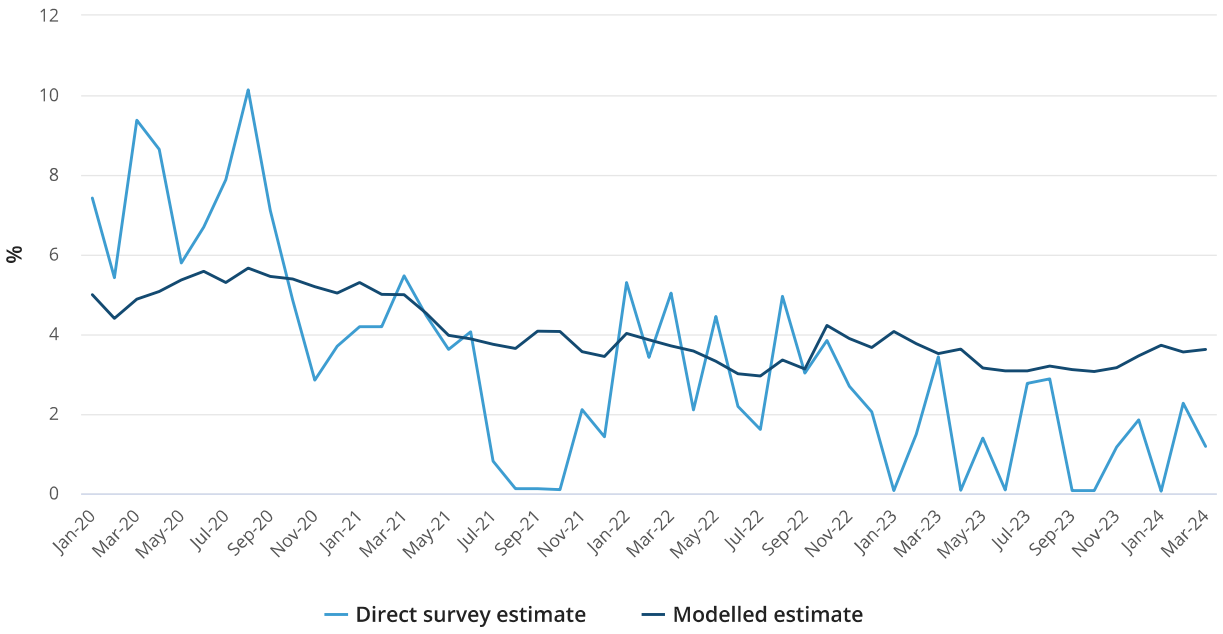
Compare the three unemployment rate graphs below. All three regions show improvement but the regions with a smaller population, like Queensland Outback and Shepparton, have much more stable estimates, with a significant reduction in extreme month to month movements.

As can also be seen in the three graphs, the modelled and direct estimates both track similarly over time. However, the modelled estimates for the regions with smaller populations, like Queensland Outback and Shepparton, provide a more reliable indication of change in those areas.

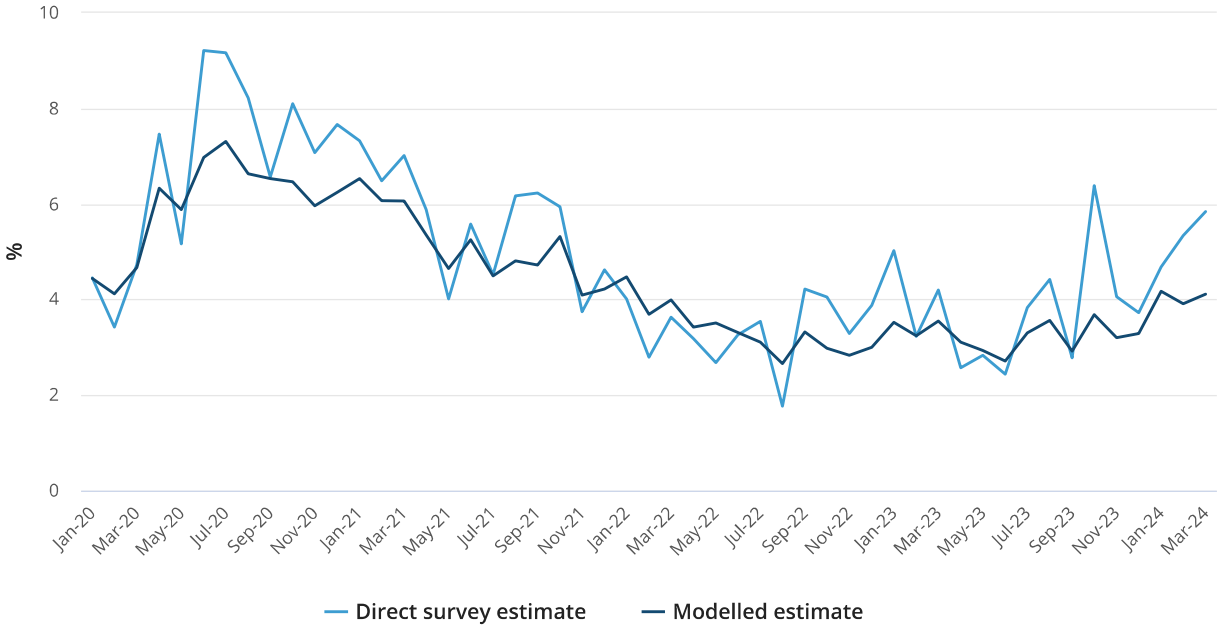
Unemployment rate, South Australia - Outback



Unemployment rate, Shepparton



Unemployment rate, Sydney - City and Inner South



While the new modelled estimates provide much better regional labour market information, they still have some

limitations in measuring statistically significant month-to-month movements, beyond the evolving underlying trend.

The modelled estimates still contain an element of error (mean squared error), though this is much smaller than the standard errors associated with direct survey estimates. Information on the mean squared errors is available in A Rao-Yu model for small area estimation of labour force statistics (https://www.abs.gov.au/statistics/research/rao-yu-model-small-area-estimation-labour-force-statistics#2-modelling) .

As such, while they provide a more definitive indication of changes in regional labour markets, caution should still be exercised in over-interpreting single month-to-month movements in the modelled estimates.

The modelled estimates are also the best source of data for analysis at the Greater Capital City Statistical Areas level. While estimates for capital cities and the balance of states have not been directly modelled, the aggregated modelled SA4 data are better than the direct survey estimates, particularly for the balance of states which generally have smaller populations and smaller sample sizes.

The modelled estimates have some limitations in the amount of data items and the length of the time series that are currently available. While the ABS recommends using the modelled estimates whenever possible, for analysis focusing on age and sex (or other variables that are also not currently available), or for analysis over a longer period of time (pre-2016 for unemployment analysis or pre-2020 for employment), users should continue to use the direct survey estimates.

When using the direct survey estimates, the ABS recommends using (moving) annual averages. A simple moving average will smooth the series, however, a more sophisticated method is the filter based 2x12 moving average. A detailed explanation of this method is available in Time Series Analaysis: Seasonal Adjustment Methods (/websitedbs/d3310114.nsf/4a256353001af3ed4b2562bb00121564/5fc845406def2c3dca256ce100188f8e) .

To support historical comparisons, we are exploring options for backcasting the existing modelled estimates (for example, back to 2012 or 2013).

Future modelled series

We are developing a method to produce SA4 modelled estimates by age and sex, with initial estimates expected to be released in 2025.

We are also exploring methods for modelling regional labour force estimates at lower levels, including SA3 and SA2 regions.

Illustrative estimates for SA4 modelled estimates by age and sex are available in Future directions for modelled regional labour force estimates using administrative data (/statistics/detailed-methodology-information/information-papers/future-directions-modelled-regional-labour-force-estimates-using-administrative-data) . Indicative estimates at the SA3 level were also included in this update.

Detailed regional labour market information

Jobs in Australia

Jobs in Australia (/statistics/labour/jobs/jobs-australia/latest-release) presents information on jobs and employed people sourced from the Linked Employer-Employee Database (LEED). Regional information is available for three levels of statistical areas (SA4, SA3, and SA2) and the Local Government Area (LGA) level.

The LEED uses tax data to create a detailed labour market dataset, including characteristics of employees, jobs and employers. Outputs from the LEED are also available in Personal Income in Australia (/statistics/labour/earnings-and-

working-conditions/personal-income-australia/latest-release) , which publishes the number of income earners, amounts received, and the distribution of income by three statistical areas (SA4, SA3, and SA2) and Local Government Area (LGA).

You can also create custom tables from the data using TableBuilder: Jobs and Income in Australia (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/jobs-and-income-employed-persons) .

We recommend using LEED data for detailed or complex analysis of employment in regional labour markets, beyond what is available from the more timely and frequent Labour Force estimates, but more frequently than every five years.

Census

The five-yearly Census (/census) provides a rich snapshot of all people living in Australia on Census Night. It is the leading source of information for small population groups and areas. As well as labour force status, the Census also collects information on characteristics of people and households, enabling analyses across a broad range of socioeconomic dimensions.

Census data is available at all levels of geography, and can be accessed a number of ways, including microdata (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/census-population-and-housing) products and Community Profiles (/census/guide-census-data/about-census-tools/community-profiles) .

You can find the full range of available Census products from Find Census dat (/census/find-census-data) a.

We recommend using Census data for detailed regional labour market analysis, where a focus on detailed person or household characteristics is important.

Other sources

As well as the sources listed above, labour force status at a regional level is included as a variable within a range of some of our other data sources.

- The Labour Force supplementary surveys and labour Multi-Purpose Household Survey topics (Characteristics of Employment; Participation, Job Search and Mobility; Barriers and Incentives to Labour Force Participation; Retirement and Retirement Intentions), provide regional data in relation these topics. These data are available in Microdata and TableBuilder: Characteristics of Employment (https://www.abs.gov.au/statistics/microdata-tablebuilder/available-microdata-tablebuilder/characteristics-employment-australia) , Microdata and TableBuilder: Participation, Job Search and Mobility, (https://www.abs.gov.au/statistics/microdata-tablebuilder/available-microdata-tablebuilder/participation-job-search-and-mobility-australia) Microdata and TableBuilder: Barriers and Incentives to Labour Force Participation (https://www.abs.gov.au/statistics/microdata-tablebuilder/available-microdata-tablebuilder/barriers-and-incentives-labour-force-participation) and Microdata and TableBuilder: Retirement and Retirement Intentions (https://www.abs.gov.au/statistics/microdata-tablebuilder/available-microdata-tablebuilder/retirement-and-retirement-intentions) .
- The Education and Work and Qualifications and Work surveys provide data on engagement in work and/or study, current and recent study, qualifications, and transitions to work. Regional data is available at the SA 4 level in Microdata and TableBuilder: Education and Work (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/education-and-work-australia) and Microdata and TableBuilder: Qualifications and work (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/qualifications-and-work) .
- If you are interested in information on health conditions and risk factors, the Microdata and TableBuilder: National Health Survey (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/national-health-survey) includes labour force information.
- If you are interested in information on disability, ageing and carers, the Microdata and TableBuilder: Disability, Ageing and Carers (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/disability-ageing-and-carers-australia) has employment and income data at sub-state geographic levels.
- information on employment outcomes of migrants is available in Microdata and TableBuilder: Permanent

migrants in Australia (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/permanent-migrants-australia) and Microdata and TableBuilder: Characteristics of recent migrants (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/characteristics-recent-migrants) . You can also use the migrant information available from the LEED in TableBuilder: Jobs and Income of Employed Persons (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/jobs-and-income-employed-persons) .

I'm looking for regional labour market data by...

This table summarises the most relevant regional labour market data sources by topic. The quality of regional data has been prioritised when assigning ratings.

Some of these data sources have topics available through their TableBuilder and microdata products.

Topics available by data source (a)(b)

	LFS Modelled	LFS Direct	JIA	PIA	Census
Below SA4-level regions	(c)		✔	✔	✔
Labour force status	✔	■			■
Income			■	✔	■
Sector			□	□	
Industry		■	✔	□	■
Sex	(c)	✔	✔	■	■
Age groups	(c)	✔	✔	■	■
Education		□			✔
Part-time and full-time employment		■			□
Employment arrangement		□	□		

✔ Recommended for this topic in relation to regional labour market data.

■ Published for this topic in relation to regional labour market data however some limitations should be noted.

□ Available for this topic upon request or via TableBuilder and microdata products.

a. Ratings provide guidance on the relative quality of the different sources. Business and administrative sources generally provide mo accurately reported employment data than household sources and are recommended for each topic where available.

b. Acronyms used in table are: Labour Force Survey (LFS), Jobs in Australia (JIA), and Personal income in Australia (PIA).

c. We plan to include these items in future publications.

Feedback

Data and resources available

This section summarises the regional labour market data available according to their key features. It also lists other information which may help you to understand regional labour market data.

Regional labour market data sources

We produce many data sources measuring the regional labour market and related concepts. The most relevant data sources are included below, including which of the data source 'pillars' of labour statistics they are based on (household survey data, business survey data and/or administrative data).

ABS regional labour market data sources

Release	Pillar	Frequency	Description
Labour Force Survey, Detailed (/statistics/labour/employment-and-unemployment/labour-force-australia-detailed/latest-release)	Combined Admin data and Household survey	Monthly	Modelled time series estimates of employment and unemployment.
	Household survey	Monthly	Headline estimates of employment, unemployment, and hours worked, broken down by demographics. There is also detailed data available in Microdata: Longitudinal Labour Force (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/longitudinal-labour-force-australia) .
Jobs in Australia (/statistics/labour/jobs/jobs-australia/latest-release)	Admin data	Annual	Filled jobs estimates for nearly 2,500 regions, including industry, age, sex and occupation data, based on Personal Income Tax data. More detailed data available through TableBuilder: Jobs and Income of Employed Persons (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/jobs-australia) .
Personal Income in Australia (https://www.abs.gov.au/statistics/labour/earnings-and-working-conditions/personal-income-australia/latest-release)	Admin data	Annual	Income estimates for more nearly 2,500 regions, including industry, age, sex and occupation data, based on Personal Income Tax data. More detailed data available through TableBuilder: Jobs and Income of Employed Persons (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/jobs-australia) .
Census (/census/find-census-data)	Household survey	Five yearly	Industry, occupation, income, geographic and demographic data for every Australian resident. Use Data by region (https://dbr.abs.gov.au/) for regional snapshots, and Detailed data products (/statistics/microdata-tablebuilder/available-microdata-tablebuilder/census-population-and-housing) for customised tables and analysis.

Non-ABS data sources

There are a number of other sources of key regional labour market data produced by other organisations:

- Internet Vacancy Index (https://www.jobsandskills.gov.au/data/internet-vacancy-index)
  The Internet Vacancy Index (IVI) is a monthly count of online job advertisements compiled by Jobs and Skills Australia. Data are available by occupational groups, skill level groups, state or territory and by regional areas.
- Small Area Labour Markets (https://www.jobsandskills.gov.au/data/small-area-labour-markets)
  Jobs and Skills Australia produces quarterly Small Area Labour Markets (SALM) estimates of unemployment and the unemployment rate at the Statistical Area Level 2 (SA2) and Local Government Area (LGA) level.
- Nowcast of Employment by Region and Occupation (https://www.jobsandskills.gov.au/data/nero)
  Jobs and Skills Australia produce monthly estimates of employment by occupation at the Statistical Area 4 (SA4) level.
- JobSeeker Payment and Youth Allowance Recipients (https://data.gov.au/dataset/ds-dga-728daa75-06e8-442d-931c-93ecc6a57880/details?q=jobseeker)
  The Department of Social Services produce monthly counts of Job Seeker and Youth Allowance recipients at the Statistical Area 2 (SA2) level.